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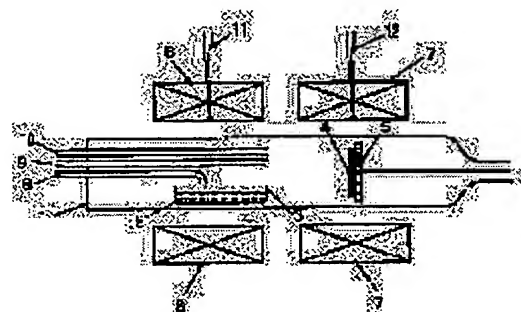
(54) METHOD FOR MAGNESIUM-DOPED NITRIDE TYPE III-V GROUP COMPOUND SEMICONDUCTOR CRYSTAL

(57)Abstract:

PROBLEM TO BE SOLVED: To surely supply an organomagnesium compound onto a substrate without causing thermal decomposition of the compound and to enable doping of the substrate with a prescribed amount of Mg by specifying the raw materials of a group V element, a group III element and Mg at the time of performing vapor phase epitaxial growth of the semiconductor crystal with a hot-wall method.

SOLUTION: In this method, NH₃ or hydrazine, a gaseous mixture of HCl or gaseous chlorine and an organic compound of a group III element, or a gaseous halide of a group III element, and a gaseous organomagnesium compound are used as a group V element raw material, a group III element raw material, and an Mg raw material respectively and these raw materials are supplied onto a substrate in a reaction tube using a hot-wall method. For example, a gaseous mixture of HCl and H₂ is supplied through a nozzle 8 onto molten Ga

2 in a boat 3 placed in a high temp. region of a reaction tube 1 to allow Ga to react with HCl and to form gaseous GaCl and then, the formed gaseous GaCl are supplied onto a substrate 4. The gaseous GaCl is allowed to react with a gaseous mixture of NH₃ and bis(ethylcyclopentadienyl)Mg, which is supplied through a nozzle 10, to grow an Mg-doped GaN crystal on the substrate 4.



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